

**COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Tidewater Regional Office**

STATEMENT OF LEGAL AND FACTUAL BASIS

Southeastern Public Service Authority
Suffolk Regional Landfill, Suffolk, Virginia
Permit No. TRO-61341

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Southeastern Public Service Authority has applied for a Title V Operating Permit for its Suffolk facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact: _____ Date: December 6, 2007

Air Permit Manager: _____ Date: December 6, 2007

Regional Director: _____ Date: December 6, 2007

FACILITY INFORMATION

Permittee

Southeastern Public Service Authority
723 Woodlake Drive
Chesapeake, Virginia 23320

Facility

SPSA Regional Landfill
1 Bob Foeller Drive
Suffolk, Virginia 23434

County-Plant Identification Number: 51-800-00121

SOURCE DESCRIPTION

SIC Code 4953, NAICS Code: 562212 – The source is a municipal solid waste landfill with a tire shredder, leachate collection system, and a landfill gas collection and control system. Energy recovery includes a landfill gas fired engine installation utilizing four Caterpillar engine/generators. Treated landfill gas is sold and piped directly to Ciba Specialty Chemicals, Inc. for supplemental boiler fuel. Any excess landfill gas produced after supplying the engines and Ciba is flared on site.

Power Generation (Registration No. 61137) obtained a NSR permit dated August 18, 1995, for the operation of the combustion equipment. At this time, Suffolk Energy Partners, L.P. is also the primary operator of the landfill gas collection and control system. SPSA is reliant on Suffolk Energy Partners, L.P. to maintain and operate the GCCS equipment and the combustion/control equipment. And Suffolk Energy Partners, L.P. is reliant on SPSA to provide the landfill gas for treatment and use in the generators. For purposes of Title V permitting, EPA guidelines find that the business relationship between SPSA and Suffolk Energy Partners, L.P. creates a single entity that requires only one Title V permit. Regulations often refer to the landfill 'owner' or 'operator'. SPSA will remain the sole owner of the landfill, but it is evident that landfill operations are shared between SPSA and Suffolk Energy Partners, L.P.

Those areas of the permit that require monitoring, recordkeeping, reporting, etc., are the responsibility of the entity created from SPSA and Suffolk Energy Partners, L.P.. It will be necessary for the two parties to expand their contracts and/or agreements to address those action items required by Federal Regulations and listed in the Title V permit.

The Suffolk Regional landfill first began receiving waste on January 22, 1985 under authority of a permit issued by Virginia Department of Waste Management. The initial design capacity of the landfill was greater than 2.5 million megagrams of waste, so the landfill was subject to the New Source Performance Standard, Subpart WWW when the 'Initial Design Capacity' report was signed. Since that time, the landfill has been expanded and thereby modified under the definitions for permitting. Initially below the threshold Tier II calculations for NMOC emissions, the facility reported calculations that exceeded the threshold of 50 megagrams of NMOC in a year (report of June 7, 2002 at 66.99 megagrams). With the addition of 'cell V' to the landfill design and plans for cell VI, the current landfill design capacity exceeds 27 million cubic yards of waste capacity. Recent innovations in the handling of landfill gas which will be utilized as fuel for on-site power generation or off-site as a fuel supplement is called 'LFG treatment'.

Treatment involves three distinct physical processes; (1.) some type of dewatering which may be a cooling process or refrigeration, (2.) filtering through a fine screen type of filter at approximately 10 microns, to capture particulate, and (3.) compression to a psi level that will support a fuel burning device.

In lieu of the approval of amendments to the NSPS, Subpart WWW, which are expected to relax the requirements pertaining to the destruction of NMOCs, an interim waiver has been granted to SPSA by the EPA, Region III, to dispense with the initial performance testing of the engines.

Considering the extent of the physical treatment processes applied to the landfill gas stream, at the SPSA landfill, this facility is now subject to regulations at 40 CFR 60.752(b)(2)(iii)(C). Under this section of the NSPS, "landfill gas collected from a MSW landfill may either be combusted in an appropriate control device or routed to a "treatment system that processes the collected gas for subsequent sale or use". The direct result of this determination by the EPA is that an initial performance test for the engines at Suffolk Energy Partners, L.P. will not be required at this time. The promulgation of a 'Landfill MACT' has added an additional requirement; a 'Startup, Shutdown and Malfunction Plan must be developed and maintained on site.

The facility is a Title V major source of Nitrogen Oxides. This source is located in an attainment area for all pollutants, and is a major source. The energy recovery facility was previously permitted under a Minor NSR Permit issued on August 18, 1995. Suffolk Energy Partners, L.P., is a co-operator of the landfill gas collection and control system and holder of the NSR permit.

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

FL-1	Candle Flare
GEN-1, GEN-2, GEN-3, GEN-4	The Caterpillar engine/generators
OS-1	Pipeline for landfill gas to Ciba
LFO-1	Landfill Operations
GCCS	Gas Collection and Control System

EMISSIONS INVENTORY

A copy of the permit application emission inventory is attached. Emissions are summarized in the following tables.

2006 Actual Emissions

Emission Unit	2006 Criteria Pollutant Emission in Tons/Year				
	VOC	CO	SO ₂	PM ₁₀	NO _x
Landfill Operations	3.5	-	-	-	-
Combustion Equipment	1.01	84.6	0.85	4.73	47.0
Total	4.51	84.6	0.85	4.73	47.0

2006 Facility Hazardous Air Pollutant Emissions

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Pollutant	2006 Hazardous Air Pollutant Emission in Tons/Yr
Trace HAP; Landfill Operations	0.22
Trace HAP; Combustion Equipment	0.41
TOTAL	0.63

EMISSION UNIT APPLICABLE REQUIREMENTS

Limitations

The following limitations are derived from Conditions 3, 4, 5, 6, 8, 9, etc of the August 18, 1995 permit issued to Power Generation, Inc./Suffolk Energy Partners.

Condition 4 - limiting the approved fuel for the engines and flare as only landfill gas.

Condition 5 - limiting the landfill gas throughput to engines to 656 million cubic feet per year.

Condition 8 - limiting the criteria pollutant emissions for the engine operations.

Condition 9 - sets the opacity limit at 5 percent and requires VEE's on each engine stack.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- < 9 VAC 5-50-80 "New/Modified source standard for Visible Emissions" – units may not emit greater than 20% opacity except for one six-minute period in any one hour of not more than 30% opacity (reference 40 CFR 60, Appendix A. Method 9).
- < 9 VAC 5-50-20 "Facility and Control Equipment Maintenance or Malfunction" – at all times, the facility, including associated air pollution control equipment, must be maintained and operated in a manner consistent with air pollution control practices for minimizing emissions.

Periodic Monitoring

The monitoring and recordkeeping requirements in Condition 3 of the NSR permit have been modified to meet Part 70 requirements.

Condition 3 - requires monitoring of the flare and the gas flow rate for the GCCS.

- ♦ Facility emissions are based on the assumption that any efficient LFG collection system has a maximum capture rate of 75% on the landfill.
- ♦ The VOC emissions assumed a default value equal to 39% of the generated NMOC content of the landfill gas flow.

Testing

Condition 6 - describes emission testing requirements for the facility. Because the facility has begun to process all landfill gas in the 'treatment system', testing combustion devices has been deferred.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the annual consumption of landfill gas for the engines.

Condition 10 – requires records of gas consumption by the engines.

Reporting

All reports required by Subpart WWW (Section 60.755) and the Landfill MACT, Subpart AAAA shall be prepared and submitted to the Tidewater Regional Office in accordance with procedures outlined in Subpart WWW (Section 60.757) and the Landfill MACT, Subpart AAAA.

Streamlined Requirements

The permit does not contain any streamlining of permit requirements.

CHANGES TO THE TITLE V PERMIT

Selection of new 'k' value for calculation of the landfill gas production rate:

Because landfills are growing changing emission sources, LFG generation rates need to be calculated regularly to keep tabs on actual LFG production and to update the value of constants used in the EPA Landfill Gas Emissions Model (LandGEM). HDR Engineering obtained data on 'Refuse Fill History' and projected MSW tonnages for operating years 2007 through 2012, assuming a three percent annual growth (using historical MSW quantities as a baseline).

The LandGEM model uses a first-order decay equation to predict LFG generation based on the amount and age of waste in-place. L_0 is set to equal 100 cubic meters of methane per Megagram of waste in-place (AP-42, Section 2.4). The 'k' value for each landfill is a site-specific number for the methane generation rate constant, units of $[\text{yr}^{-1}]$. SCS Engineers observed a higher generation rate for the methane at the SPSA Regional Landfill and adjusted the 'k' value from 0.04 to 0.06 yr^{-1} . This value for k is higher than the published value in AP-42, but is based on actual LFG recovery rates measured at the site and SCS' professional engineering experience. Also, the NMOC concentration in LFG was set to 234 ppm by volume (ppmv) as hexane based on the results of the Facility's Tier 2 Emission Test conducted on February 26, 2002.

Calculation of the maximum gas flow rate for the five-year period of the Title V permit.

Using the new calculations and assumptions from above, the maximum LFG flow rate for the operating year 2012 is equal to 5,884 scfm. The landfill gas is partitioned as follows:

Maximum LFG flow rate to Caterpillar engine gensets =	1,300 scfm
Maximum LFG flow rate to offsite – Ciba Specialty Chemicals =	3,084 scfm
Maximum LFG flow rate to the utility flare =	<u>1,500 scfm</u>
Total LFG flow (2012) =	5,884 scfm

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

Comments on General Conditions

B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement No. 2-2003".

This general condition cites the Article(s) that follow(s):

Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

This general condition cites the sections that follow:

- 9 VAC 5-80-80. Application
- 9 VAC 5-80-140. Permit Shield
- 9 VAC 5-80-150. Action on Permit Applications

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

This general condition contains a citation from the Code of Federal Regulations as follows:
40 CFR 60.13 (h). Monitoring Requirements.

J. Permit Modification

This general condition cites the sections that follow:

- 9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources
- 9 VAC 5-80-190. Changes to Permits
- 9 VAC 5-80-260. Enforcement
- 9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
- 9 VAC 5-80-1790. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
- 9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

U. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:

- 9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction
- 9 VAC 5-80-110. Permit Content

Y. Asbestos Requirements

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follow:
40 CFR 61.145, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to demolition and renovation.

40 CFR 61.148, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to insulating materials.

40 CFR 61.150, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to waste disposal.

This general condition cites the regulatory sections that follow:

9 VAC 5-60-70. Designated Emissions Standards

9 VAC 5-80-110. Permit Content.

STATE ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

9 VAC 5-50-310, Odorous Emissions

9 VAC 5-50-320, Toxic Pollutants

INAPPLICABLE REQUIREMENTS

Citation	Title of Citation	Description of Applicability
40 CFR 60, Subpart Cc 40 CFR 60, Subpart WWW 40 CFR 63, Subpart AAAA 40 CFR 63, Subpart ZZZZ	Emission Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills Landfill New Source Performance Standard Landfill MACT RICE MACT	This subpart is not applicable to the landfill because of recent modifications to the facility. Engines combusting 'treated' landfill gas are not subject to the NSPS testing, monitoring, recordkeeping and reporting requirements. Recordkeeping and reporting requirements of the Landfill MACT do not apply to fuel burning units that combust 'treated' landfill gas. The RICE MACT only applies to engines that are co-located at a major HAP source. The SPSA Regional Landfill is not major for HAP's.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
03	Ferrous Metals Recovery	5-80-720 B	PM	N/A
04	Tire Shredding	5-80-720 B	PM	N/A
05	Leachate Lagoon	5-80-720 B	VOC	N/A
06	Diesel storage tank	5-80-720 C	VOC	10,000 gallons
07	Diesel storage tank	5-80-720 C	VOC	10,000 gallons
08	Hydraulic oil tank	5-80-720 C	VOC	3000 gallons
09	Motor oil tank	5-80-720 C	VOC	2500 gallons
10	Waste oil tank	5-80-720 C	VOC	2000 gallons

11	Diesel water tank	5-80-720 C	POC's	100 HP
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¹The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

PUBLIC PARTICIPATION

The proposed permit will be placed on public notice in The Virginian Pilot from October 21, 2007 to November 20, 2007.